

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A method for selecting one of multiple data paths to a device, comprising:

selecting one of multiple paths indicated as enabled to transmit data, wherein a path is indicated as enabled or disabled;

gathering transfer time data for ~~multiple first and second~~ transfer sizes for each ~~enabled~~ path ~~capable of being selected~~, wherein the transfer size is a size of the data being transferred in one transfer operation;

determining one path currently indicated as enabled to be selected to transfer data for a ~~given~~ the first transfer size that has transfer time data for the ~~given~~ first transfer size satisfying a threshold transfer time; and

indicating the determined path as disabled for the ~~given~~ first transfer size, wherein paths indicated as disabled for ~~given one of the~~ transfer sizes are not capable of being selected to use to transmit data having the ~~given~~ transfer size, wherein ~~[[one]]~~ the determined path indicated as disabled for the first transfer size is capable of being concurrently indicated as disabled for a first transfer size and enabled to transfer data for ~~[[a]]~~ the second transfer size.

2. (Original) The method of claim 1, further comprising:

indicating one disabled path as enabled after performing a threshold number of transfer operations.

3. (Previously Presented) The method of claim 2, wherein the path indicated as disabled is disabled for a first threshold number of transfer operations if the transfer data time for the path satisfies a first threshold and is disabled for a second threshold number of transfer operations if the transfer data time for the path satisfies a second threshold.

4. (Canceled)

5. (Currently Amended) A method for selecting one of multiple data paths to a device, comprising:

selecting one of multiple paths indicated as enabled to transmit data for a plurality of transfer size ranges, wherein a path is indicated as enabled or disabled;

for each enabled path, gathering a cumulative transfer time for all transfer operations for each of the transfer size ranges during a measurement period through the path and a cumulative number of the transfer operations for each of the transfer size ranges during the measurement period; and

for each enabled path determining the average cumulative transfer time for each of the transfer size ranges for the measurement period by dividing the cumulative time for the transfer size range by the cumulative number of transfers for the transfer size range; and

indicating one of the paths as disabled for one of the transfer size ranges if the average cumulative transfer time for the path for the transfer size range satisfies a threshold, wherein the paths are capable of being selectively enabled and disabled for different transfer size ranges.

6. (Currently Amended) The method of claim 5, wherein the measurement period comprises a number of transfer operations for all paths, wherein the determination to disable paths occurs after the number of transfer operations in the measurement period has occurred, and further comprising starting another measurement period to gather transfer time data for the transfer size ranges after determining paths to disable.

7. (Canceled)

8. (Currently Amended) The method of claim [[7]] ~~5~~, ~~wherein the measurement period comprises a number of transfer operations for all paths for a transfer size~~, wherein the determination to disable paths for ~~[[a]]~~ one of the transfer size ranges occurs after the number of transfer operations in the measurement period has occurred, and further comprising starting another measurement period to gather transfer time data for the transfer size ranges after determining paths to disable for the transfer size ranges.

9. (Currently Amended) The method of claim 5, wherein the transfer time is measured for the transfer size ranges from the time the transfer is sent to the device to the time a response is received from the device indicating that the transfer completed, further comprising adding the transfer time for a transfer transmitted down the path to the cumulative transfer time for the transfer size range for the path.

10. (Currently Amended) The method of claim 5, further comprising:
for each enabled path, determining a best average transfer time for each of the transfer size ranges from the average cumulative transfer times for each of the transfer size ranges for all paths, wherein determining whether the average cumulative transfer time for one path and transfer size range satisfies the threshold comprises determining whether the average cumulative transfer time for the transfer size range and the path exceeds the best average transfer time for the transfer size range by a percentage amount.

11. (Currently Amended) The method of claim 10, wherein determining whether the average cumulative transfer time for each of the transfer size ranges satisfies the threshold further comprises disabling the path for one of the transfer size ranges for a first number of transfer operations if the average cumulative transfer time for the transfer size range for the path exceeds the best average transfer time for the transfer size range by a first percentage amount and disabling the path for the transfer size range for a second number of transfer operations [[if]] in response to determining that the average cumulative transfer time for the transfer size range for the path exceeds the best average transfer time by a second percentage amount.

12. (Original) The method of claim 1, wherein the multiple paths comprise multiple paths between a first controller and a second controller, and wherein one path is selected to transmit updates to a primary storage area managed by the first controller to the second controller to store in a secondary storage area.

13. (Canceled)

14. (Original) The method of claim 1 wherein the paths extend through a network.

15. (Currently Amended) A system for selecting one of multiple data paths to a device, comprising:

means for selecting one of multiple paths indicated as enabled to transmit data, wherein a path is indicated as enabled or disabled;

means for gathering transfer time data for ~~multiple first and second~~ transfer sizes for each ~~enabled path capable of being selected~~, wherein the transfer size is a size of the data being transferred in one transfer operation;

means for determining one path currently indicated as enabled to be selected to transfer data for ~~a given~~ the first transfer size that has transfer time data for the ~~given first~~ transfer size satisfying a threshold transfer time; and

means for indicating the determined path as disabled for the ~~given first~~ transfer size, wherein paths indicated as disabled for one of the transfer sizes are not capable of being selected to use to transmit data having the ~~given~~ transfer size, wherein ~~[[one]] the determined path indicated as disabled for the first transfer size is capable of being concurrently indicated as disabled for a first transfer size and enabled to transfer data for [[a]] the second transfer size.~~

16. (Original) The system of claim 15, further comprising:

means for indicating one disabled path as enabled after performing a threshold number of transfer operations.

17. (Previously Presented) The system of claim 16, wherein the path indicated as disabled is disabled for a first threshold number of transfer operations if the transfer data time for the path satisfies a first threshold and is disabled for a second threshold number of transfer operations if the transfer data time for the path satisfies a second threshold.

18. (Canceled)

19. (Currently Amended) A system for selecting one of multiple data paths to a device, comprising:

means for selecting one of multiple paths indicated as enabled to transmit data for a plurality of transfer size ranges, wherein a path is indicated as enabled or disabled;

means for gathering a cumulative transfer time for all transfer operations for each of the transfer size ranges during a measurement period through the path and a cumulative number of the transfer operations for each of the transfer size ranges during the measurement period for each enabled path; and

means for determining the average cumulative transfer time for each of the transfer size ranges and paths for the measurement period by dividing the cumulative time for the transfer size range by the cumulative number of transfers for the transfer size range for each enabled path; and

means for indicating one of the paths as disabled for one of the transfer size ranges if the average cumulative transfer time for the path for the transfer size range satisfies a threshold, wherein the paths are capable of being selectively enabled and disabled for different transfer size ranges.

20. (Currently Amended) The system of claim 19, wherein the measurement period comprises a number of transfer operations for all paths, wherein the determination to disable paths occurs after the number of transfer operations in the measurement period has occurred, and further comprising means for starting another measurement period to gather transfer time data for the transfer size ranges after determining paths to disable.

21. (Canceled)

22. (Currently Amended) The system of claim ~~[[21]]~~ 19, ~~wherein the measurement period comprises a number of transfer operations for all paths for a transfer size,~~ wherein the determination to disable paths for ~~[[a]]~~ one of the transfer size ranges occurs after the number of transfer operations in the measurement period has occurred, and further comprising means for starting another measurement period to gather transfer time data for the transfer size ranges after determining paths to disable for the transfer size ranges.

23. (Currently Amended) The system of claim 19, wherein the transfer time is measured for the transfer size ranges from the time the transfer is sent to the device to the time a response is received from the device indicating that the transfer completed, further comprising

means for adding the transfer time for a transfer transmitted down the path to the cumulative transfer time for the transfer size range for the path.

24. (Currently Amended) The system of claim 19, further comprising:

means for determining for each enabled path a best average transfer time for each of the transfer size ranges from the average cumulative transfer times for each of the transfer size ranges for all paths for each enabled path, wherein the means for determining whether the average cumulative transfer time for one path and transfer size range satisfies the threshold comprises means for determining whether the average cumulative transfer time for the transfer size range and the path exceeds the best average transfer time for the transfer size range by a percentage amount.

25. (Currently Amended) The system of claim 24, wherein the means for determining whether the average cumulative transfer time for each of the transfer size ranges satisfies the threshold further comprises means for disabling the path for one of the transfer size ranges for a first number of transfer operations if the average cumulative transfer time for the transfer size range for the path exceeds the best average transfer time for the transfer size range by a first percentage amount and disabling the path for the transfer size range for a second number of transfer operations [[if]] in response to determining that the average cumulative transfer time for the transfer size range for the path exceeds the best average transfer time by a second percentage amount.

26. (Original) The system of claim 15, wherein the multiple paths comprise multiple paths between a first controller and a second controller, and wherein one path is selected to transmit updates to a primary storage area managed by the first controller to the second controller to store in a secondary storage area.

27. (Canceled)

28. (Original) The system of claim 15, wherein the paths extend through a network.

29. (Currently Amended) An information bearing medium for selecting one of multiple data paths to a device, wherein the information bearing medium includes code capable of causing a processor to perform:

selecting one of multiple paths indicated as enabled to transmit data, wherein a path is indicated as enabled or disabled;

gathering transfer time data for ~~multiple first and second~~ transfer sizes for each ~~enabled~~ path ~~capable of being selected~~, wherein the transfer size is a size of the data being transferred in one transfer operation; and

determining one path currently indicated as enabled to be selected to transfer data for a ~~given the first~~ transfer size that has transfer time data for the ~~given first~~ transfer size satisfying a threshold transfer time; and

indicating the determined path as disabled for the ~~given first~~ transfer size wherein paths indicated as disabled for ~~given one of the~~ transfer sizes are not capable of being selected to use to transmit data having the ~~given~~ transfer size, wherein ~~[[one]] the determined path indicated as disabled for the first transfer size is capable of being indicated as disabled for a first transfer size and a same time capable of being indicated as enabled to transfer data for [[a]] the second transfer size.~~

30. (Original) The information bearing medium of claim 29, further capable of causing the processor to perform:

indicating one disabled path as enabled after performing a threshold number of transfer operations.

31. (Previously Presented) The information bearing medium of claim 30, wherein the path indicated as disabled is disabled for a first threshold number of transfer operations if the transfer data time for the path satisfies a first threshold and disabling the path for a second threshold number of transfer operations if the transfer data time for the path satisfies a second threshold.

32. (Canceled)

33. (Currently Amended) An information bearing medium for selecting one of multiple data paths to a device, wherein the information bearing medium includes code capable of causing a processor to perform:

selecting one of multiple paths indicated as enabled to transmit data for a plurality of transfer size ranges, wherein a path is indicated as enabled or disabled;

for each enabled path, gathering a cumulative transfer time for all transfer operations for each of the transfer size ranges during a measurement period through the path and a cumulative number of the transfer operations for each of the transfer size ranges during the measurement period; and

for each enabled path determining the average cumulative transfer time for each of the transfer size ranges for the measurement period by dividing the cumulative time for the transfer size range by the cumulative number of transfers for the transfer size range; and

indicating the path as disabled for one of the transfer size ranges if the average cumulative transfer time for the path for the transfer size range satisfies a threshold, wherein the paths are capable of being selectively enabled and disabled for different transfer size ranges.

34. (Currently Amended) The information bearing medium of claim 33, wherein the measurement period comprises a number of transfer operations for all paths, wherein the determination to disable paths occurs after the number of transfer operations in the measurement period has occurred, and further causing the processor to perform starting another measurement period to gather transfer time data for the transfer size ranges after determining paths to disable.

35. (Canceled)

36. (Currently Amended) The information bearing medium of claim ~~[[35]]~~ 33, ~~wherein the measurement period comprises a number of transfer operations for all paths for a transfer size~~, wherein the determination to disable paths for ~~[[a]]~~ one of the transfer size ranges occurs after the number of transfer operations in the measurement period has occurred, and further causing the processor to perform starting another measurement period to gather transfer time data for the transfer size ranges after determining paths to disable for the transfer size ranges.

37. (Currently Amended) The information bearing medium of claim 33, wherein the transfer time is measured for the transfer size ranges from the time the transfer is sent to the device to the time a response is received from the device indicating that the transfer completed, and further causing the processor to perform adding the transfer time for a transfer transmitted down the path to the cumulative transfer time for the transfer size range for the path.

38. (Currently Amended) The information bearing medium of claim 33, and further causing the processor to perform:

for each enabled path, determining a best average transfer time for each of the transfer size ranges from the average cumulative transfer times for each of the transfer size ranges for all paths, wherein determining whether the average cumulative transfer time for one path and transfer size range satisfies the threshold comprises determining whether the average cumulative transfer time for the transfer size range and the path exceeds the best average transfer time for the transfer size range by a percentage amount.

39. (Currently Amended) The information bearing medium of claim 38, wherein determining whether the average cumulative transfer time for each of the transfer size ranges satisfies the threshold further comprises disabling the path for one of the transfer size ranges for a first number of transfer operations if the average cumulative transfer time for the transfer size range for the path exceeds the best average transfer time for the transfer size range by a first percentage amount and disabling the path for the transfer size range for a second number of transfer operations [[if]] in response to determining that the average cumulative transfer time for the transfer size range for the path exceeds the best average transfer time by a second percentage amount.

40. (Original) The information bearing medium of claim 29, wherein the multiple paths comprise multiple paths between a first controller and a second controller, and wherein one path is selected to transmit updates to a primary storage area managed by the first controller to the second controller to store in a secondary storage area.

41. (Canceled)

42. (Original) The information bearing medium of claim 29, wherein the paths extend through a network.

43. (Previously Presented) The method of claim 1, wherein the threshold is satisfied if a percentage of a first average transfer time for the given path exceeds second average transfer time.

44. (Previously Presented) The system of claim 15, wherein the threshold is satisfied if a percentage of a first average transfer time for the given path exceeds second average transfer time.

45. (Previously Presented) The information bearing medium of claim 29, wherein the threshold is satisfied if a percentage of a first average transfer time for the given path exceeds second average transfer time.

46. (New) The method of claim 1, wherein the threshold transfer time comprises a first threshold transfer time and wherein the determined path disabled for the first transfer size is enabled for the second transfer size in response to transfer time data for the second transfer size for the determined path not satisfying a second threshold transfer time.

47. (New) The system of claim 15, wherein the threshold transfer time comprises a first threshold transfer time and wherein the determined path disabled for the first transfer size is enabled for the second transfer size in response to transfer time data for the second transfer size for the determined path not satisfying a second threshold transfer time.

48. (New) The information bearing medium of claim 29, wherein the threshold transfer time comprises a first threshold transfer time and wherein the determined path disabled for the first transfer size is enabled for the second transfer size in response to transfer time data for the second transfer size for the determined path not satisfying a second threshold transfer time.